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AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims

1. (Currently Amended) An electrolysis apparatus operating to produce aluminum comprising: a plurality of anodes each attached to a top plate by a metal bolt extending from the top plate to the anode top, each anode having a lower portion immersed in a cryolite-based molten electrolyte bath, wherein and a solid material selected from the group consisting of alumina and cryolite, and mixtures thereof, together with an effective amount of cementitious binder, said solid material contacting and having a thickness to completely circumscribe ~~circumscribing at least an upper portion of at least one of said anodes, where the solid material dissolves into the molten electrolyte during electrolysis to the extent the remaining solid material thickness is from 30% to 80% of the original thickness yet still circumscribes the top sides of the anodes, leaving the lower portion of the anodes free to contact the bath.~~

2. (Currently Amended) The electrolysis apparatus of Claim 1, wherein the anodes are inert anodes, and the solid material is of such a composition that its dissolution does not contaminate the bath, or aluminum produced.

3. (Canceled)

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4. (Currently Amended) The electrolysis apparatus of Claim 1 ~~also~~
~~containing a~~ wherein the top metal plate is metal.
5. (Original) The electrolysis apparatus of Claim 1 where the solid
material comprises from about 40 wt.% to about 80 wt.% cryolite, about 2 wt.% to about
25 wt.% alumina and from about 5 wt.% to about 25 wt.% of cementitious binder
material.
6. (Original) The electrolysis apparatus of Claim 1, wherein the solid
material comprises alumina containing from 5 wt.% to 15 wt.% of cementitious binder
material.
7. (Original) The electrolysis apparatus of Claim 1, wherein the solid
material will dissolve at temperatures of about 1000°C in the presence of a cryolite-based
molten electrolyte bath.
8. (Original) The electrolysis apparatus of Claim 1, wherein the solid
material will dissolve to the extent where the remaining solid material thickness is from
30% to 80% of the original thickness.
9. (Canceled)

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10. (Currently Amended) An electrolysis apparatus operating to produce aluminum comprising an inert anode system comprising: at least one inert anode attached to a top plate by a metal bolt extending from the top plate to the inert anode top, the inert anode having a lower portion immersed in contact with a cryolite-based molten salt electrolyte bath, where at least an upper portion of the at least one inert anode contacts and is completely circumscribed by a solid material having a thickness to completely circumscribe said at least one anode, said solid material subject to attack by gases from the bath, wherein the solid material is selected from the group consisting of alumina-based cement and cryolite-alumina, both of which will dissolve into the molten salt bath in the presence of the molten salt bath during electrolysis to the extent the remaining solid material thickness is from 30% to 80% of the original thickness yet still circumscribes the top sides of the at least one inert anode, leaving the lower portion of the at least one anodes free to contact the bath.

11. (Original) The electrolysis apparatus of Claim 10 where the solid material is about 40 wt.% to 80 wt.% cryolite, about 2 wt.% to 25 wt.% alumina, and 5 wt.% to 25 wt.% of a cementitious material.

12. (Canceled)

13. (Canceled)

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14. (Currently Amended) The electrolysis apparatus of Claim 10, wherein the solid material will dissolve to the extent that the remaining solid material thickness is from 40% to 70% of the original support thickness, and the solid material is of such a composition that its dissolution does not contaminate the bath, or aluminum produced.

15. (Original) The electrolysis apparatus of Claim 10, wherein the cement material is an alumina based refractory cement.

16. (Canceled)

17. (Original) The electrolysis apparatus of Claim 10, where the solid material is applied by casting.

18. (Original) The electrolysis apparatus of Claim 10, where the solid material is applied by spraying.

19. (Original) The electrolysis apparatus of Claim 10, where the solid material is applied by dipping.